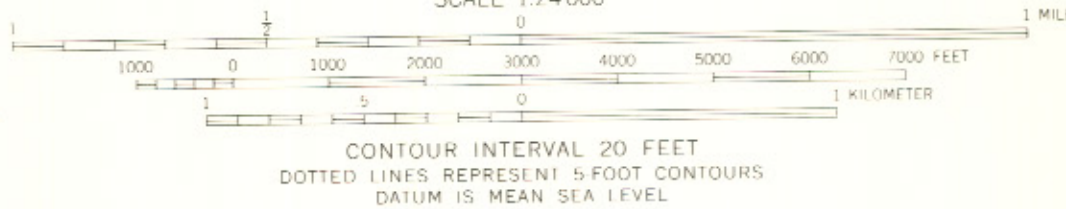


Base from U.S. Geological Survey,
Lemay Island Quadrangle 1967



**GEOLOGIC MAP OF THE
LEMAI ISLAND QUADRANGLE,
BOX ELDER COUNTY, UTAH**

by
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U.S. Geological Survey

1986

Field mapping by authors in 1983-85,
assisted by S. Garwin in 1984.
Patricia H. Speranza, Cartographer



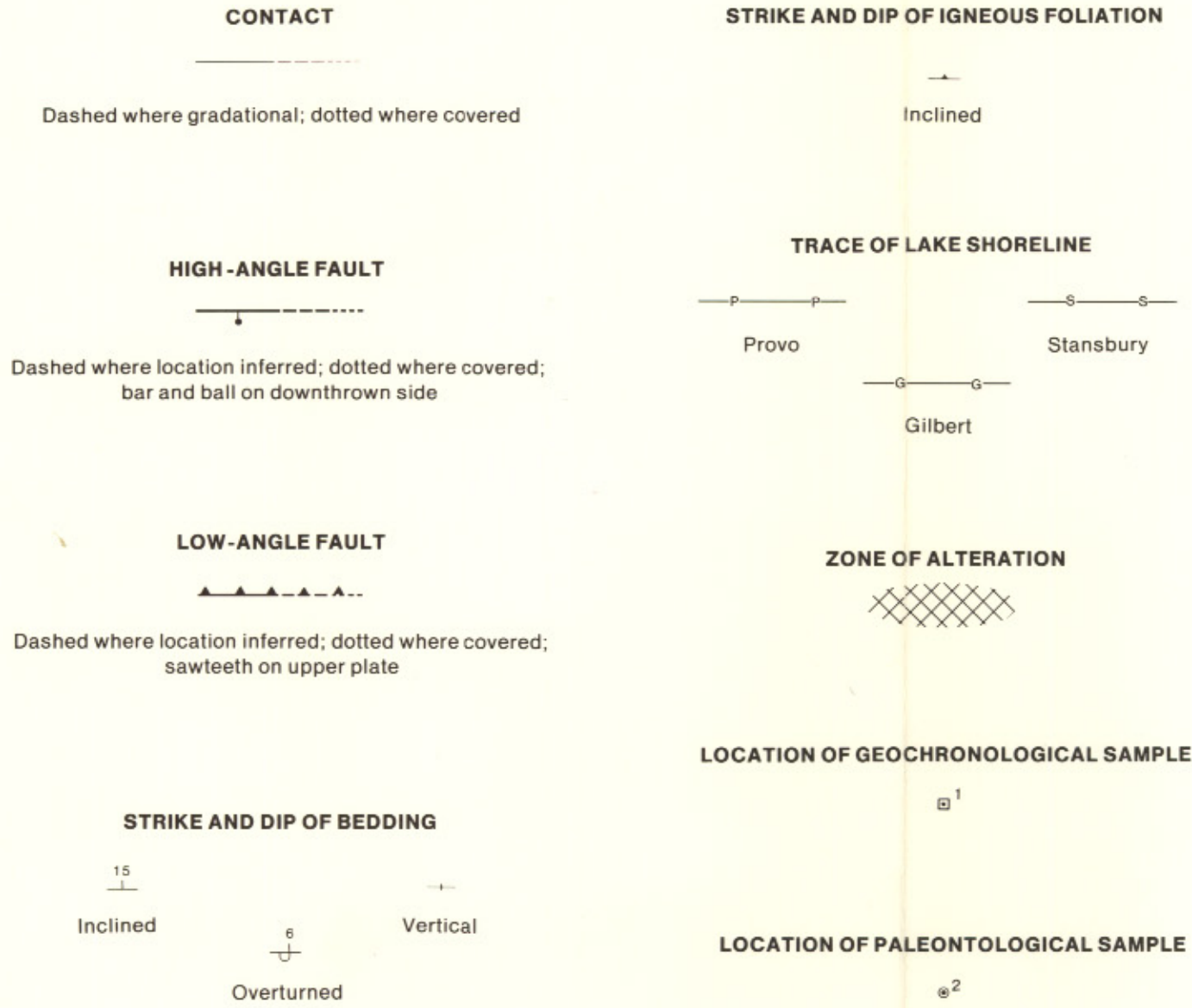


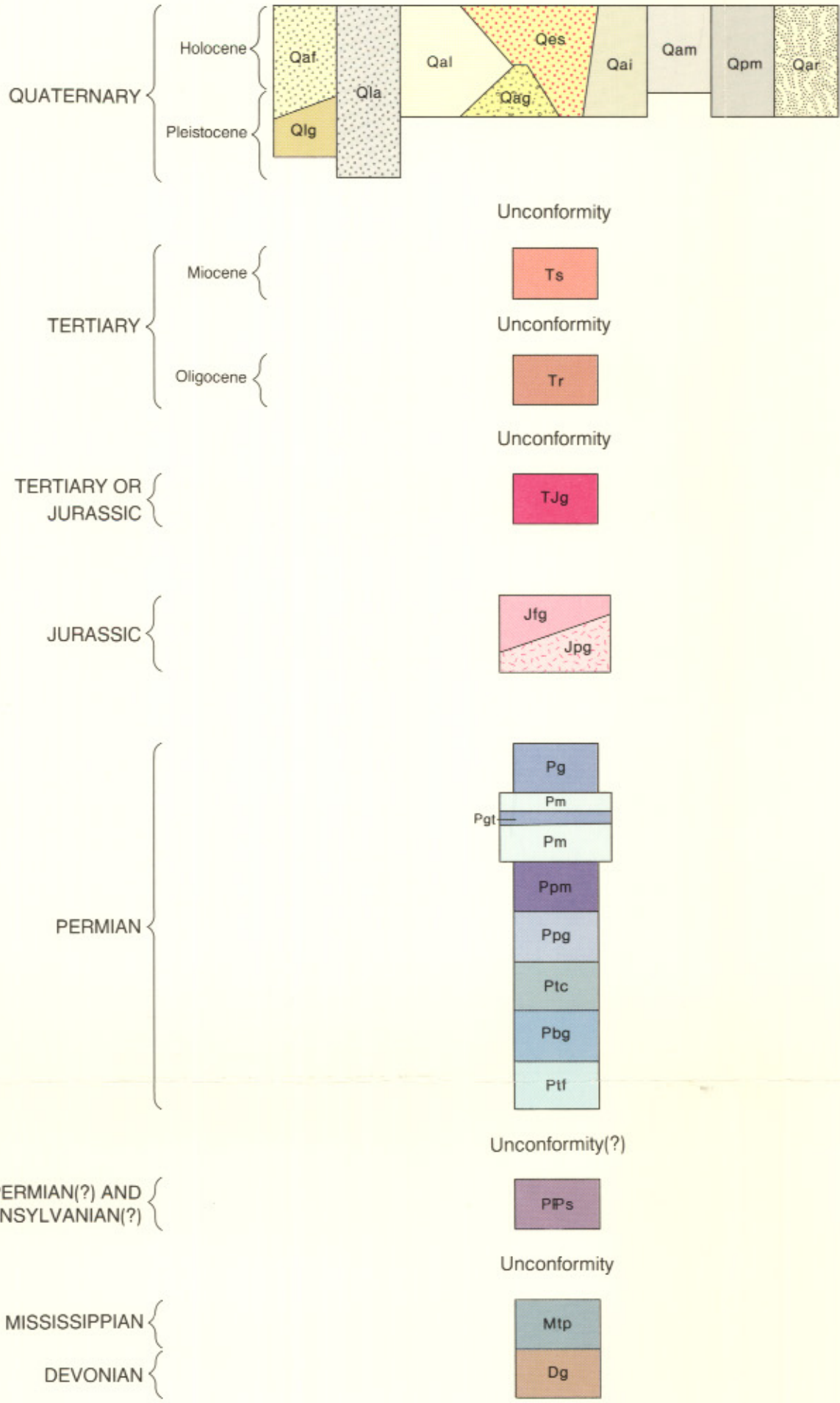
TABLE 1. POTASSIUM-ARGON GEOCHRONOLOGICAL DATA									
Map Number	Sample Number	Material Dated	Mean K_2O	^{40}Ar rad (mol/g)	$^{100}^{40}Ar$ rad total ^{40}Ar	Calculated Age (Ma)	Analyst	Latitude	Longitude
1	M831.I-16	hornblende*	0.7745	3.69375 x 10 ⁻¹¹	18.39	32.8 ± 1.6	W.C. Hillhouse	41°09'08"	113°50'39"
* Hornblende is red-brown, with oxidized rims; hornblende from rhyodacite unit (Tr)									
Constants: $\lambda_e + \lambda_g = 0.581 \times 10^{-10} \text{ year}^{-1}$; $\lambda_g = 4.962 \times 10^{-10} \text{ year}^{-1}$; $K^{40}/K_{\text{total}} = 1.167 \times 10^{-4} \text{ mol/mol}$									

TABLE 2. PALEONTOLOGY DATA FOR THE LEMAY ISLAND QUADRANGLE									
Map Number	Field Number	USGS Collection	Rock Unit	Fossil Age	Date of Report	Paleontologist	Faunal Description	Location Latitude	Location Longitude
1	M84LI-02	29436-PC	Grandeur Formation	Most likely late Early Permian	12/24/84	John Repetski	<i>Hindodus</i> sp. 1 Pa element 1 Pb element 1 Sa element 1 Sb element <i>Neostreptognathodus</i> cf. <i>N. Sulcoplicatus</i> (Youngquist, Hawley and Miller) 11 Pa elements The range of <i>N. Sulcoplicatus</i> is within the Roadian Stage. This is in approximately the upper third of the Lower Permian of USGS usage. This faunal assemblage represents a shallow-water biofacies.	41°10'13"	113°52'07"
2	M83LP-25	28936-PC	Tripon Pass Limestone	lower part of <i>Isostichia</i> -Upper <i>Crenulata</i> Zone (=latest Kinderhookian; =middle Early Mississippian)	9/29/83	Anita G. Harris	143 Pa elements of <i>Siphonodella Isosticha</i> (Cooper) transitional to <i>S. Obuscula</i> Hass 5 Pa elements of <i>Polygnathus Communis Communis</i> Branson & Mehl 2 Pa elements of <i>Gnathodus Punctatus</i> (Cooper) 2 Pa elements of <i>Pseudopolygnathus</i> spp. 5 long-bladed spathognathodiform elements (cf. <i>Spathognathodus</i> "Macer Branson & Mehl") 1 M element 7 Pb elements 2 lonchodiniiform elements 1 Sa element 4 Sc elements 580 indet. bar, blade, and platform fragments This collection can be very tightly dated and is diagnostic of the lower part of the <i>Isostichia</i> -Upper <i>Crenulata</i> Zone (=latest Kinderhookian) and is thus from a correlative of the Joana Limestone.	41°12'54"	113°45'42"
3	M83LP-42	29225-PC	Tripon Pass Limestone	latest Kinderhookian	4/17/84	Anita G. Harris	1 juvenile Pa element of <i>Gnathodus</i> cf. <i>G. Delcatus</i> Branson & Mehl 1 Pa element fragment of <i>Gnathodus</i> sp. indet. 1 Pa element fragment of <i>Ouaridinia</i> sp. indet. 1 Pa element of <i>Polygnathus Communis Communis</i> Branson & Mehl 5 Pa elements of <i>Siphonodella Isosticha</i> (Cooper) 7 indet. bar, blade, and platform fragments The sample is of latest Kinderhookian age and the fauna (there is no mixing of ages) is consistent with the Tripon Pass Limestone.	41°13'07"	113°45'05"

DESCRIPTION OF MAP UNITS

Qal	Alluvial fan deposits—Unconsolidated fan deposits of gravel, sand, and silt; colluvium included locally.	Jpg	Porphyritic granodiorite—Pale-gray, biotite granodiorite containing phenocrysts of pink potassium-feldspar as large as 2.5 cm diameter in a medium- to coarse-grained groundmass of quartz, plagioclase, potassium-feldspar, and biotite with accessory sphene and hornblende. Diorite inclusions and pink aplite dikes common. Includes zone of rocks gradational with the fine-grained granodiorite unit (Jfg).
Qla	Lacustrine and alluvial deposits, undivided—Alluvium older than Lake Bonneville etched by erosional shorelines, and thin lacustrine gravel and sand deposits.	Pg	Gerster Limestone—Pale-gray, thick-bedded, shelly limestone. Brachiopods, bryozoans, and crinoid debris abundant; in places fossils are silicified. Brown chert and sandstone beds occur within the limestone.
Qai	Alluvium—Unconsolidated silt, sand, and fine pebble gravel in ephemeral streams and washes. Includes local floodplain deposits.	Pgt	Tongue of Gerster Limestone—Pale-gray, shelly limestone tongue within Murdock Mountain Formation. Contains one conspicuous bed of brachiopod-rich limestone.
Qes	Eolian sand—Unconsolidated tan to light-brown, fine- to medium-grained sand and tan silt, occurring as complexes of small (2-m-high) dunes or broad sheets covering fine-grained alluvial deposits. Commonly contains detrital evaporite minerals. Most small dune complexes are vegetated.	Pm	Murdock Mountain Formation—Brown, black, and white, thin-bedded chert, brown sandstone, and gray dolomite and dolomitic sandstone.
Qai	Alluvial silt—Unconsolidated deposits of tan silt, clay, and fine-grained sand. Generally flat-lying, but locally forming eolian mounds less than 1 m high. Dessication features, vegetation, and black algae are common.	Ppm	Meade Peak Phosphatic Shale Tongue of the Phosphoria Formation—Black, platy, siliceous shale; brown, calcareous sandstone and siltstone; gray, thick-bedded dolomite; and minor dark-gray limestone.
Qam	Alluvial mud—Unconsolidated clay, silt, and soluble salts in low-lying areas characterized by ephemeral, low-gradient drainages. Sparsely vegetated, forming gray to brown plains.	Ppg	Grandeur Formation of the Park City Group—Gray and brownish-gray, medium- to thick-bedded, cherty dolomite with thin interbeds of laminated sandstone and bedded chert, and rare limestone.
Qpm	Playa mud—Unconsolidated clay, silt, and white soluble salts in nearly level, undrained, vegetation-free basins.	Ptc	Trapper Creek Formation—Thick-bedded gray bioclastic limestone alternating with thin beds of silty limestone, ribbed sandy limestone and dolomite, gray-brown dolomite, and clean gray limestone. Chert sporadically present in silty limestone.
Qar	Desert ripples—Light-colored silt ponded behind dark-colored, vegetated sand and silt ridges that form a ripple pattern.	Pbg	Badger Gulch Formation—Dark-gray to black, platy, silty limestone with bioclastic beds. Lower part of unit, exposed at Little Pigeon Mountain, grades downward into underlying Third Fork Formation with increasing content of brown sandstone.
Qag	Alluvial gravel—Deposits of tightly packed, fine to coarse pebble gravel deposited in narrow, sinuous stream channels discordant with present drainage systems. Maximum clast size is about 5 cm.	Ptf	Third Fork Formation—Dark-gray, fine-grained, calcareous sandstone; weathers brown. Medium- to thin-bedded; locally interbedded with calcareous siltstone. Upper part contains interbeds of gray to black, fossiliferous, platy limestone.
Qlg	Lacustrine gravel and sand, undivided—Unconsolidated gravel and sand that form shoreline deposits of Lake Bonneville. Clasts are well rounded and size-sorted, commonly with little matrix. Locally includes beachrock cemented by calcareous silt	PPs	Strathearn(?) Formation—Conglomerate and sandstone forming prominent ledges. Clasts in conglomerate include green and black chert, dark-colored quartzite, white quartz, and medium-gray limestone. Clasts are supported in a matrix of locally pebbly calcareous sandstone.
Ts	Sedimentary rocks—Brown conglomerate and sandstone forming a small outcrop at south end of Little Pigeon Mountain. Conglomerate contains carbonate and granitoid clasts.	Mtp	Tripon Pass Limestone—Black, platy, shaly to silty limestone; weathers light- to medium-gray. Minor coarse-grained crinoid-rich limestone.
Tr	Rhyodacite—Red-brown, crystal-rich rhyodacite lava flow containing potassium feldspar, plagioclase, quartz, biotite, and hornblende in brown groundmass.	Dg	Guilmette Formation—Massive to thick-bedded, dark-gray limestone and dolomite; highly fractured. Beds of <i>Amphipora</i> sp. and algal heads. Bedded quartz sand in limestone matrix near top of unit.
TJg	Granitoid dike—Orange-weathered, pale-gray, fine-grained biotite granitoid occurring as dikes.		
Jfg	Fine-grained granite—Pale-gray, fine-grained biotite monzogranite with sparse phenocrysts of biotite, quartz, plagioclase, and potassium-feldspar. Intrudes the porphyritic granodiorite unit (Jpg).		

CORRELATION OF MAP UNITS



FORMATION	SYMBOL	THICKNESS feet (meters)	LITHOLOGY
Rhyodacite	Tr	1000-1400 (305-426)	
Gerster Limestone	Pg	790 (240)	
Tongue of Gerster Limestone	Pgt	33 (10)	
Murdock Mountain Formation	Pm	2340 (715)	
Meade Peak Phosphatic Shale Tongue of the Phosphoria Formation	Ppm	180 (55)	
Grandeur Formation	Ppg	2445 (745)	
Trapper Creek Formation	Ptc	500 (150)	
Badger Gulch Formation	Pbg	1075 (325)	
Third Fork Formation	Ptf	820 (250)	
Strathearn(?) Formation	PPs	120 (35)	
Tripon Pass Limestone	Mtp	650 (200)	
Guilmette Formation	Dg	400 (120)	

